

IZYUMOV, A.N.

Genetic and agroecologic qualities of soils in Kedabek District.
Dokl. AN Azerb. SSR 19 no.8:59-62 '63. (MIRA 17:11)

1. Sektor erozii AN AzSSR. Predstavleno akademikom AN AzSSR V.R.
Volobuyevym.

ALIYEV, G.A., akademik; IZYUMOV, A.Z., red.

[Brown forest soils; in regions of the eastern part of the Greater Caucasus] Korichnevye lesnye pochvy; v pre-delakh vostochnoi chasti Bol'shogo Kavkaza. Baku, Izd-vo AN Azerbaidzh.SSR, 1965. 111 p. (MIRA 18:11)

1. Akademiya nauk Azerbaydzhanskoy SSR (for Aliyev).

IZYUMOV, V.N.; KOPOSOVA, T.L.; Prinimali uchastiye: KOMOVA, Z.P.; BUNTOVA, V.I.

Synthesis of alkyd resins modified by monobasic acids.

Lakokras. mat. i ikh prim. no.5:2-5 '63. (MIRA 16:11)

1. Yaroslavskiy tekhnologicheskiy institut.

/IZYUNOV, B. D.

The problem of stabilizing aqueous solutions of carbamide resins. A. A. Berlin and B. D. Izyunov. *J. Applied Chem. (U.S.S.R.)* 19, 23-9 (1946) (English summary).—A new class of stabilizers for aq. solns. of carbamide resins was found in resins UFD; condensation products of PhOH, dicyanodiamide, and CH₂O. The best effect is achieved by the use of 10% aq. solns. of these

UFD resins made from 40-60 parts PhOH and 40-60 parts dicyanodiamide with formalin. PhOH 54, formalin 135, and NaOH 1.8 in water 3 parts were heated to 45° with stirring, when the exothermic reaction caused a rise to 65°, which was held for 2-2.5 hrs., when 36 parts dicyanodiamide was added with a temp. rise to 80-5°; after 1-1.5 hrs. at this temp. the mixt. had specific viscosity of 14-16 and the reaction was stopped. The aq. soln. was storable for a month at 10-15°. The optimum amt. of the stabilizer was found to be about 10% on wt. of the carbamide resin. G. M. Kosolapoff

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3

APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3"

USSR/Chemical Technology. Chemical Products and Their Application -- Silicates.
Glasses. Ceramics. Binders, 1-9

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5335

Author: Kudryashev, I. T., Izyumov, B. D.

Institution: None

Title: Imparting Hydrophobic Properties to Cellular Concrete

Original
Publication: Beton i zhelenobeton, 1955, No 5, 290-293

Abstract: To decrease water absorption of cellular concrete it is recommended to apply to their surface, with a paint brush, water soluble organic silicon compounds (SC) -- methyl- and ethyl silicates of sodium (MSG-9 and ESG-9), mixed with finely dispersed filler (cement of ground sand). Concentration of the aqueous solution of SC must be 2-4%. The surfaces being thus impregnated need not be predried. A considerable effect of the SC becomes manifest only after a short duration moistening of the articles (24 hours). Aqueous solution of SC can be mixed with water soluble paints. The possible fields of application of SC are stated.

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3"

8/04/81/000/001, 012/024
BIO1/P208

AUTHORS: Inyamon, B. D., Pakhomov, V. I., Panfilov, I. M.

TITLE: New types of organosilicon plastics

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1961, 619, abstract
5N38 (5P38) ("Vestn. tekhn. i ekonom. inform. K. i in-t
tekhn.-ekon. issled. Gos. kom-tya Sov. Min. SSSR po khimii",
1959, no. 3 (15), 3-6)

TEXT: A short characteristic of organosilicon compounds is given: KMK-9
(KMK-9) molding powder, KMK-218 (KMK-218), KMC-9 (KMS-9) molding materials,
and CKП-9 (SKP-9) glass textolite (technological, physico-chemical,
physico-mechanical, and dielectric properties, temperature-dependence
of dielectric and mechanical characteristics). [Abstracter's note:
Complete translation.]

Card 1/1

S/081/61/000/014/028/030
B105/B202

AUTHORS: Izyumov B. D., Pakhomov V. I., Gol'dshteyn Zh. I.
TITLE: Water soluble hydrophobic organosilicon liquids
PERIODICAL: Referativnyy zhurnal. Khimiya, no. 14, 1961, 619, abstract
14755 (Vestn. tekhn. i ekon. inform. N.-1. in-t tekhn.-ekon.
issled. Gos. kom-ta Sov. Min. SSSR po khimii, 1959,
No. 5 (17), 45-48)

TEXT: The authors discuss the properties and the fields of application of water-soluble organosilicon polymers which are used to waterproof textile products, paper, carton, leather, and building materials. Materials are waterproofed by means of aqueous solutions of the liquid RMC-9 (GMS-9) in the presence of catalysts (NH_3 , CH_3COOH , H_2O_2 , triethylamine, alum etc.) and by subsequent heat treatment (5-10 min at $130-150^\circ\text{C}$) for the fixation of the foil. The liquids MSG-9 and ES-9 are aqueous solutions of sodium methyl and ethyl silicate. They are applied by a brush, a spray or by immersion, and subsequently dried on air. The authors give data on the

Card 1/2

Water soluble hydrophobic ...

S/081/61/000/014/028/030
B105/B202

effectiveness of the treatment of a series of materials by the liquids mentioned. [Abstracter's note: Complete translation]

Card 2/2

Thermostable silico-organic glues

S/661/61/000/006/072/081
D247/D302

lco-organic glues tested were found to last for 100 hours at 200 - 350°C, 10 hours at 300 - 350°C and 10 - 20 hours at 400°C. There are 9 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: R. R. McGregor, Silicones and their uses, New York, (1954).

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass, Moskva
(Scientific Research Institute of Plastics, Moscow)

Card 2/2

S/661/61/000/006/073/081
D247/D302

AUTHORS: Pakhomov, V. I., Izyumov, B. D. and Panfilova, I. P.

TITLE: Thermal stability and resistance of silico-organic pressed materials to arcing

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh soedineniy; trudy konferentsii, no. 6: Doklady, diskussii, resheniye. II Vses. konfer. po khimii i prakt. prim. kremneorg. soyed., Len. 1958. Leningrad, Izd-vo AN SSSR, 1961, 316-322

TEXT: A series of silico-organic pressed materials were examined for their stability, mechanical and dielectric properties. Their composition and uses were recorded, and also their appearance. In the discussion, in which B. A. Kiselev (Moscow) took part, particular properties of various resins were mentioned. The greatest thermal stability noted was 100 hours at 350 - 400°C and the highest limit before electrical breakdown was 18 kV/mm. There are 8 figures, 1 table and 8 references: 5 Soviet-bloc and 3 non-Soviet
Card 1/2

✓

IZYUMOV, B.D., red.; OSIFOVA, V.M., red.

[The chemical industries of Russia] Bol'shaia khimiia
Rossii; sbornik. Moskva, Sovetskaiia Rossiia, 1964.
222 p. (MIRA 17:12)

IZYUMOV, Boris Mironovich; BOLDYREV, V.I., retsenzents; PROLOVA,
Ye.I., red.izd-va; SHKLYAR, S.Ya., tekhn. red.

[Safety engineering in the use of electric maining equipment]
Tekhnika bezopasnosti pri ekspluatatsii shakhtnykh elektro-
ustanovok. Moskva, Gosgortekhnizdat, 1963. 147 p.

(MIRA 16:5)

(Electricity in mining—Safety regulations)

IZYUMOV, Boris Mironovich; TYLKIN, M.N., red.

[For the mine electrician] Rabotniku shakhtnogo elektro-
khoziaistva. Tula, Tul'skoe knizhnoe izd-vo, 1964. 69 p.
(MIRA 1813)

ANTONYUK, B.N.; DENESYUK, I.P.; KUROV, Y.O.; VAYNSHTEYN, A.I.; BRYCHIKOV, V.A.;
VEYTSMAN, M.B.; IVANOV, A.A.; IVANOV, A.S.; GAZEVSCHI, B.O.; KOZEL'TSEV,
I.K.; KOZEL'TSEV, L.I.; KUVALDIN, S.G.; MIROSHIN, A.I.; MEDKOV, G.Ye.;
ZUBKOVSKIY, B.P.; IZYUMOV, B.N.; EDAL'SHTEYN, V.I.; KOCHETKOV, V.P.;
BUBLIKOV, A.V.; DZHANASHIYA, V.A.

Patents. Bum. 1 der. prem. no.1:53-54 Ja-Mr '65.

(MIRA 18-10)

IZYUMOV, G.I.

Physiology of digestion in *Didinium nasutum* O.F.M. Trudy Len.ob-va
est. 69 no.4:137-145 '47. (MLRA 9:3)

1. Laboratoriya zoologii bespozvonochnykh Leningradskogo gosudar-
stvennogo universiteta, zaveduyushchiy professor V.A. Dogel'.
(Ciliata)

Digestive processes in *Stylonychia mytilus*. G. I. Bryunov (Leningrad State Univ.). *Zool. Zhur.* 27, 305-312 (1948). The physiology of digestive processes of this protozoan is discussed. The digestive vacuole starts with pH 7.4 in its interior, declines to 8.1, then a value of 8.3 is reached at the more advanced stage of digestion in 2-2.5 hrs. The main stored food matter is fat and smaller aunts. of glycogen. In fasting, the former vanishes in 4 days. The optimum temp. is 14-16° for the organism (digestive and reproductive processes). The oxidizability of the medium is also important, as too much org. matter is harmful; the optimum value of oxidizable matter is equiv. to 24.8 ml. 0.1 N KMnO₄ per 10 ml.

G. M. Kosolapoff

IZYUMOV, G.I., kand.biolog.nauk

Reproduction of wild animals in captivity. Priroda 51 no.6:70-77
Je '62. (MIRA 15:6)

1. Leningradskiy zoopark.
(Animals, Habits and behavior of) (Reproduction)

S/081/61/000/007/008/010
B107/B207

AUTHOR: Izyumov, I. D.

TITLE: Plastics tested under conditions of tropical climate

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 7, 1961, 549, abstract
7П4 (7P4) ("Vestn. tekhn. i ekon. inform. N.-i. in-t
tekhn.-ekon. issled. Gos. kom-ta Sov. Min. SSSR po khimii",
1959, no. 1(13), 25-30)

TEXT: The physicomechanical properties of standard samples were tested under the climatic conditions prevailing in the Union of Burma. The standard samples consisted of thermosetting and thermoplastic materials produced in the Soviet Union. The majority of samples were tested in the open air on a tennis court. Another portion was packed into a case and stored in a moist room which could not be aired. The third portion was dug into the ground at a depth of approximately 50 - 60 cm. Experiments showed that the properties of some materials (acetyl cellulose etrols, 2-AT-55 (2-DT-55), 2-AT-30 (2-DT-30), polyvinyl ethylal, ПOK-60 (POK-60), ПОВ-67 (POV-67) etc.), considerably deteriorated: they became

Card 1/2

IZYUMOV, I.F.

Basis of three coil sondes for induction logging. Geol. i
geofiz. no.6:145-149 '64. (MIRA 18:11)

1. Institut geologii i geofiziki Sibirskogo otdeleniya
AN SSSR, Novosibirsk.

IZYUMOV, M. A. (Moskva); KHZMALYAN, D. M. (Moskva); YAKOVLEVSKIY, O. V.
(Moskva)

Propagation of a plane jet system. Inzh. zhur. 2 no.4:269-277
'62. (MIRA 16:1)

(Jets)

IZYUMOV, M.A., inzh.; KUTMAN, B.L.; LYAKH, V.Ya., inzh.; KHZMALIAN, D.M.,
kand.tekhn.nauk

Conversion of a TKP-3 boiler to firing coal dust in plane parallel
jets. Teploenergetika 10 no.2:11-14 F '63. (MIRA 16:2)

1. Upravleniye energeticheskoy promyshlennosti Soveta narodnogo
khozyaystva Permskogo ekonomicheskogo administrativnogo rayona
i Moskovskiy energeticheskiy institut.
(Boilers)

ALL NR. A17006033

AUTHOR: Zabelin, K. (Engineer); Izyumov, N. (Engineer); Klibon, V. (Engineer);
Pevzner, I. (Engineer)

ORG: none

TITLE: "Vecher" television set

SOURCE: Radio, no. 11, 1966, 29-32

TOPIC TAGS: TV receiver, electronic equipment

ABSTRACT: The authors describe the "Vecher", a new Soviet television set put out by the Plant im. Kozitskiy in Leningrad. The new unit differs from previous sets both in external design and in the fact that it contains both tubes (8) and transistors (21) in addition to 25 semiconductor diodes. The parameters of this new set satisfy GOST requirements for second class television receivers. A complete schematic diagram is given with a detailed description of the operation of each stage. Construction is modular on a vertical chassis with printed circuits used in most modules. Provision is made for rotating the chassis through 180° and locking at 90° for facilitating inspection and repair of the unit. The channel selector is mounted on the front panel together with the T. V. tube and speakers. The other main control units (on-off switch, contrast, brightness, volume and tone controls) are located on top of the set. On the back of the set are auxiliary controls as well as jacks for antenna connection, earphone and tape recorder inputs, a fuse plug, and panels for connecting stereo and remote control attachments. The cabinet is made from wood and plastic. The set measures 610x480x340 mm overall and weighs about 25 kg. Orig. art. has: 2 figures. [JPRS: 39,548]

SUB CODE: 17, 09

Card 1/1

09.270833

IZYUMOV, N. M.

"Radio Engineering Course for Military Communications Schools", Voennoye Izdatel'stvo 2nd edition, 552 pp, 1950.

IZYUMOV, Nikolai Mikhailovich, doktor tekhnicheskikh nauk, professor;
ISLAKINA, T.F., redaktor; ISJENTSEVA, P.G., tekhnicheskii
redaktor.

[Radio relay communication] Radioreleynaya svyaz'. Moskva, "Znanie,"
1954. 15 p. (Vsesoiuznoe obshchestvo po rasprostraneniю poli-
ticheskikh i nauchnykh znaniy, Ser.4, no.29) [Microfilm]
(Radio relay systems) (MLRA 7:12)

IZYUMOV, N.M.

[Radio relay communication] Radioreleinaia svyaz'. Moskva,
Gosenergoizdat, 1954. 104 p. (MLFA 8:2D)

IZYUMOV, N.M.

[Radio reception] Radiopriem. Moskva, Voenizdat, 1954. 507 p.
(MIRA 7:111)

I 24 1000, N. [M]

USSR/ Miscellaneous - Radio communication

Card 1/1 Pub. 89 - 3/32

Authors Izyumov, N.

Title Radio communication and radio engineering in the Armed Forces

Periodical Radio 2, 4 - 5, Feb 1955

Abstract An outline on the history of the development and use of radio and radio communications in the Armed Forces is presented on the occasion of the 60th anniversary of the innovation of the radio by Alexander Stepanovich Popov.

Institution:

Submitted:

IZYUMOV, N., professor, doktor tekhnicheskikh nauk.

Ways to a "universal communication system." Radio no.11:12 N'55.
(Telephone) (MLRA 9:1)

IZYUMOV, N., Maj Gen. Eng-Tech. Service, Dr. Tech. Sci., Professor.

"Ultrashort Radiowaves," from the book, Modern Military Technology, 1956, page 145.

Translation 1114585

ИЗУМО, С.

On the road to "universal contacts." Tr. from the Russian. p. 3.

RADIO. Vol. 5, no. 7, 1956

Sofia, Bulgaria

SOURCE: East European Accessions List (EEAL) Library of
Congress, Vol. 6, No. 1, January 1957

IZYUMOV, N.M.

On the textbook "Electronic instruments." V.S.Griger'ev, B.S.
Griger'ev. Reviewed by N.M.Izyumov. Elektrosviaz' 10 no.2:72-73
P '56. (MIRA 9:6)
(Electronic apparatus and appliances)(Griger'ev, V.S.)(Griger'ev,
B.S.)

PHASE I BOOK EXPLOITATION

908

Izyumov, Nikolay Mikhaylovich

Kurs radiotekhniki (Course in Radio Engineering) 3rd ed., rev. and enl. Moscow, Voen. izd-vo M-va obor. SSSR, 1958. 687 p. No. of copies printed not given.

Ed.: Vrublevskiy, A.V., Engineer-Lt. Col.; Tech. Ed.: Sribnis, N.V.

PURPOSE: The monograph is intended for students of vocational schools specializing in communications. It may also be used by the general reader with a secondary school education who has taken a general course in electrical engineering.

COVERAGE: General aspects of radio communication and radio equipment are presented. The book discusses the fundamentals of radiation and propagation of radio waves, oscillatory circuits and feeders, vacuum and semiconducting devices, and transmitting and receiving devices. Principles of radio relay communication and simple methods of checking transmitters and receivers are also described. No personalities are mentioned. There are 32 Soviet references.

Card 1/13

IZYUMOV, Nikolay Mikhaylovich; TARASOV, F.I., red.; BORUNOV, N.I.,
tekhn. red.

[Radio relay communications] Radioreleivnaia svyaz'. Izd.2.,
polnost'iu perer. Moskva, Gosenergoizdat, 1962. 94 p.
(Massovaya radiobiblioteka, no.447) (MIRA 15:12)
(Radio relay systems)
(Microwave communication systems)

VLASOV, Viktor Fedorovich; Prinsipal uchastiye OVCHINNIKOV, N.I.,
dots.; IZYUMOV, N.M., prof., retsenzent; ITSKHOKI, Ya.S.,
prof., nauchnyy red.; LARIONOV, G.Ye., tekhn. red.

[Course in radio engineering] Kurs radiotekhniki. Moskva, Gos.
energ. izd-vo, 1962. 927 p. (MIRA 15:3)
(Radio)

L 2967-66 EWT(d)/EWP(k)/EWP(l) JKT
ACCESSION NR: AP5026357

UR/0105/64/000/009/0093/0094

AUTHOR: Baliyev, V. K.; Grudinskiy, P. G.; Izyumov, N. M.; Kulebakin, V. S.;
Mirolubov, N. N.; Sotskov, B. S.; Tsirlin, A. D.; Alekseyev, A. Ya.;
Bogoroditskiy, N. P.; Berger, A. Ya.; Yavorskiy, V. N.; Nasledov, D. H.;
Vasil'yev, D. V.

TITLE: Nikolay Nikolayevich Lutsenko (Obituary)

SOURCE: Elektrichestvo, no. 9, 1964, 93-94

TOPIC TAGS: electric engineering personnel

ABSTRACT: Doctor of Technical Sciences, Major General in the Technical Engineering Service, Professor N. N. Lutsenko died in May of this year after a long and serious illness. He graduated from the Moscow Higher Technical Academy in 1914 and was closely associated with his specialty of electrical engineering till the end of his life. He spent the first years of his practical activity at the Academy working in the electrical engineering laboratory of K. A. Krug. After that he began his career in the Soviet Army as a lowly laboratory assistant in the radiotechnical laboratory and worked his way up over thirty years to be head of the

Card 1/2

L 2967-66

ACCESSION NR: AP5026357

Department of Electrical and Military Engineering. He wrote several books: "Alternating Currents," "The Theory of Alternating Currents," "Course in General Electrical Engineering," "Radio Engineering" and, together with his co-workers, problem books on "A Course in Alternating Currents" and "The Physical Principles of Electrical Engineering." He set up a number of special courses (military application of electric power, military portable electric power stations, electric equipment for armies, electrification of military engineering works, etc.) and also participated in many engineering projects with the Soviet Army. He has written many textbooks, monographs and articles on the theoretical and applied divisions of military electrical engineering. These include "Electric Circuits" and "Fundamentals for the Design and Planning of Mobile Electric Stations." Many of N. K. Lutsenko's students are working in sections of the Soviet Army, in scientific institutes and in colleges, and in industry. These students are continuing the work of their teacher, the founder of Soviet military electrical engineering. He received his professorship in 1938 and his doctorate in 1949. He has received the Order of Lenin, three "Red Banners," the Order of the "Red Star" and many medals. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 00

NO REF SOV: 000

Card 2/2 *Lehm*

ENCL: 00

OTHER: 000

SUB CODE: EE

JPRS

IZYUMOV, Nikolay Mikhaylovich; AMALITSKIY, M.V., otv. red.;
VEYTSMAN, G.I., red.

[Principles of radio engineering] Osnovy radio tekhniki.
Moskva, Sviaz', 1965. 541 p. (MIRA 18:9)

VERTSMAN, G.Z., kand. tekhn. nauk; PANTELEYEV, P.I., kand.
tekhn. nauk; GOMOLYAKO, I.M.; TAL', K.K.; GUSEVA, K.G.;
LUGOVOY, P.A.; MASSAN, A.M.; GALKIN, N.V.; SAFIRGINA, G.M.;
CHESNOKOV, D.S.; DROZDKOV, V.I.; IZYUMOV, P.S.; ZAK, B.O.;
KOROGID, P.Ye.; MAKSIMOVICH, L.N.; ZHEOROVSKAYA, M.I.;
PAVLOVSKAYA, S.A.; BORISOV, A.V.; SELIVANETS, N.Ye.; ITKES,
V.M.; YATSKEVICH, Ya.D.; KOZYRSKIY, N.P.; NIKITIN, V.D.;
NEKLEPAYEVA, Z.A., inzh., red.; MEDVEDEVA, M.A., tekhn.red.

[Design and planning of railroad stations and junctions]
Proektirovanie zheleznodorozhnykh stantsii i uzlov; spra-
vochnoe i metodicheskoe proizvodstvo. Moskva, Transzheldor-
izdat, 1963. 443 p. (MIRA 16:12)

1. Nauchno-issledovatel'skiy institut transportnogo stroitel'-
stva (for Guseva). 2. Gosudarstvennyy institut tekhniko-
ekonomicheskikh izyskaniy i proyektirovaniya zheleznodorozh-
nogo transporta (for Zak). 3. Kiyevskiy gosudarstvennyy pro-
yektno-izyskatel'skiy institut (for Kozyrskiy). 4. Moskovskiy
institut inzhenerov zheleznodorozhnogo transporta Im. I.V.
Stalina (for Nikitin).

(Railroad engineering)

FILONENKO-BORODICH, Mikhail Mitrofanovich; IZYUMOV, S.M.; OLISOV, B.A.;
KUDRYAVTSEV, I.N.; MAL'GINOV, L.I.; SHITKO, I.K., redaktor;
GAVRILOV, S.S., tekhnicheskiy redaktor

[A course in strength of materials] Kurs soprotivleniya materialov.
Pod obshchei red. M.M.Filonsko-Borodich. Izd. 4-oj, perer. Moskva,
Gos. izd-vo tekhniko-teoret. lit-ry, Pt.2. 1956. 539 p. (MIRA 10:2)
(Strength of materials)

FILONENKO-BORODICH, Mikhail Mitrofanovich; IZYUMOV, S.M.; OLISOV, B.A.;
MAL'GINOV, L.I.; SMITKO, I.K., red.; MURASHOVA, N.Ya., tekhn.
red.

[Strength of materials course] Kurs soprotivleniia materialov.
Pod obshchei red. M.M.Filonenko-Borodicha. 4zd.5., perer. Mo-
skva, Gos. izd-vo fiziko-matem.lit-ry. Pt.1. 1961. 656 p.
(MIRA 15:3)

(Strength of materials)

IZYUMOV, S.P., ekonomist

Irtys-Karaganda Canal and bringing virgin lands of its zone under cultivation. Gidr.1 mel. 14 no.3:9-15 Mr '62. (MIRA 15.4)

1. Vsesoyuznyy gosudarstvennyy proyektno-izyskatel'skiy i nauchno-issledovatel'skiy institut Ministerstva sel'skogo khozyaystva SSSR.
(Irtys Valley-- Agriculture) (Karaganda Valley-- Agriculture)

24(3)

SOV/55-35-5-22/44

AUTHORS: Skrotskiy, G. V., Myryanov, P. S., Izumov, T. G.

TITLE: The Influence of Paramagnetic Electron Resonance on the Optical Effect of Faraday at Low Temperatures (Vliyaniye elektronnoy paramagnitnoy rezonantsa na opticheskiy effekt Faradaya pri nizkikh temperaturakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1471-1474 (USSR)

ABSTRACT: Daniels and Wesemeyer (Daniyels, Vezemeyer) (Ref 1) experimentally investigated the influence exercised by magnetic resonance on the optical Faraday (Faradey) effect. They worked with neodymium ethylene sulfate single crystals at 1.5° K, 9060 megacycles, and 5461 Å. Kastler (Ref 2) was the first to investigate the connection between Faraday effect and paramagnetic resonance, and Opechowski (Opekhovskiy) (Ref 3) carried out the respective quantum-mechanical calculations. The results obtained are discussed in the introduction. The authors of the present paper investigated these phenomena on the basis of the usual macroscopical theory; an explicit expression is derived for the angle of rotation of the polarization plane of a light wave near paramagnetic resonance in a

Card 1/3

SOV/56-35-6-22/44

The Influence of Paramagnetic Electron Resonance on the Optical Effect of
Faraday at Low Temperatures

2 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
(Ural Polytechnic Institute)

SUBMITTED: June 19, 1958

Card 3/3

IZYUMOV, V. A.

LA 5-164

USSR/Metals
Metallography
Polarography

Feb 1947

"Metallographic Studies in Polarized Light," V. A.
Izyumov, 2 $\frac{1}{2}$ pp

"Trudy Tsent Orden Lenin Nauch Issled Inst" No 12

Describes micrographic method of studying metals
with aid of polarized light. Old method but not
widely used in Soviet metallurgical techniques. To
stimulate interest in this method editors publish
methods and advantages in use of a polarized light
study of metals.

1C

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IZYUMOV, V.A.; ROMANIV, C.N.; TABINSKIY, K.P.

Thermomechanical working of the 60S2 spring steel. Vopr. mekh. real.
tver. tela no.3:188-191 '64.
(MIRA 17:11)

BELEN'KIY, Ye.F. [deceased]; RISKIN, I.V.; YUKHNOVSKIY, G.L., prof.,
retsensent; RATNIKOVA, K.I., dotsent, retsensent; OCL'BERG,
K.M., kand.tekhn.nauk, retsensent; IZYUMOV, V.N., inzh.,
retsensent; AYZENBERG, Ye.S., red.; FOMKINA, T.M., tekhn.red.

[Chemistry and technology of pigments] Khimiya i tekhnologiya
pigmentov. Izd.3., ispr. i dop. Leningrad, Gos.nauchno-tekhn.
izd-vo khim.lit-ry, 1960. 756 p. (MIRA 14:4)

1. Zaveduyushchiy kafedroy lakov i krasok Khar'kovskogo politeknicheskogo instituta (for Yukhnovskiy). 2. Kafedra lakov i krasok Khar'kovskogo politeknicheskogo instituta (for Ratnikova).
(Pigments)

B/081/61/000/021/084/094
B145/B144

AUTHOR: Izyumov, V. N.

TITLE: Use of p-tert-butyl benzoic acid for the synthesis of resins for paints and varnishes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 21, 1961, 456, abstract 21P112. (Lakokrasochn. materialy i ikh primeneniye, no. 1, 1961, 3 - 8)

TEXT: The glycerol and pentaerythritol esters of butyl benzoic acid (I), as well as the glyptal resins (II) and pentaphthalic resins (III), modified with I, were synthesized and their usability for producing various varnish and paint materials examined. It has been found that, owing to the relatively simple synthesis of I, the latter must be counted among the most economic and inexpensive raw materials for varnishes and paints. It is noted that the pentaerythritol esters of I improve the gloss, hardness, and water resistance of nitrolacquer coatings substantially. XI and III free from oil and modified by I are economic and high-quality solid resins
Card 1/2

IZYUMOV, V.N.

"Chemistry of lacquers, colors, and pigments" by G.Champetier,
G.Rabate. Reviewed by V.N.Iziumov. Lakokras.mat.i ikh prim.
no.1:84-85 '61. (MIRA 14:4)
(Faint materials) (Champetier, G.)
(Rabate, G.)

IZYUMOV, V.N.; Prinimali uchastiye: BUNTOVA, V.I.; KISELEVA, Z.P.

Synthesis of pentaphthalic resins modified with n-tert-butylbenzoic acid and manufacture of paint materials on their base. Lakokras.mat.1 ikh prim. no.6:3-6 '62. (MIRA 16:1)

1. Yaroslavskiy tekhnologicheskii institut.
(Resins, Synthetic) (Paint materials)

"APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3"

APPROVED FOR RELEASE

570653/53/180/001/1001/0001

AUTHOR: Izyumov, Ya. A.

TITLE: ~~THEORY OF SCATTERING OF SLOW NEUTRONS IN MAGNETIC CRYSTALS~~ 19
Theory of scattering of slow neutrons in magnetic crystals 57

SOURCE: Uspekhi fizicheskikh nauk, v. 80, no. 1, 1963, 41-92

TOPIC TAGS: slow neutron scattering, magnetic crystal, phonon, magnon, emission, absorption, neutron polarization

ABSTRACT: The theory of scattering of slow neutrons in crystals is presented systematically, with principal attention focused on magnetic scattering, particularly on questions which have become important in recent years, such as inelastic scattering, critical scattering, and the scattering of polarized neutrons. The presentation is within a unified mathematical treatment corresponding to a description of the scattering in the Born approximation. By introducing the so-called time formalism, first used by Van Hove (Phys. Rev. v. 95, 249 and 1374, 1954), the problem of calculating the scattering cross section per unit solid angle and per unit energy interval is reduced to a computation of the Fourier components of the correlations between the positions of two atoms in the lattice at different instants of time, and

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L 14241-00

ACCESSION NR: AP3002306

to a calculation of the correlation functions of the spin projections, for the nuclear and magnetic scattering, respectively. The appropriate mathematical apparatus is first developed and applied to an analysis of the interaction between slow neutrons and a magnet and to the determination of the differential cross section for scattering of unpolarized neutrons. This is followed by consideration of elastic nuclear and magnetic scattering of neutrons in single- and polycrystals and an exposition of the fundamentals of nuclear and magnetic neutronography. Inelastic scattering of neutrons is then considered, with the discussion limited to one-quantum scattering in which one phonon or one magnon is absorbed or emitted. This is followed by study of magnetic scattering of neutrons near the Curie or Neel point, along with critical scattering of neutrons, which arises under second-order phase transformation conditions. The review concludes with a treatment of the scattering of polarized neutrons and an analysis of the scattering cross sections of the polarized neutrons and the change in the incident-neutron polarization vector due to scattering in ferromagnets and antiferromagnets. Orig. art. has 6 figs. and 199 formulas.

ASSOCIATION: none

SUBMITTED: 00

SUB CODE: PH

Card 2/2

DATE ACQ: 12Jul63

NO REF SOV: 023

ENCL:00

OTHER: 038

"The Effect of the Central Nervous System on the Secretory Function of the Lungs." Sanit. i Sci, for'kiz State Medical Institute G. I. Pirov, Muz'kiz, 1955. (KL, No 9, Feb 55)

80: Sum. No. 531, 26 Aug 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (14)

IZYUMOV, Ye.G.

Effect of the central nervous system on the excretory function of the pulmonary membrane. Farm. i toks. 18 no.5:23-27 S-O '55.

1. Kafedra farmakologii (sav.-prof. N.P.Sinitayn) Gor'kovskogo gosudarstvennogo meditsinskogo instituta imeni S.M.Kirova.

(LUNGS, physiology,

excretory funct., eff. of CNS)

(CENTRAL NERVOUS SYSTEM, physiology,

regulation of lung excretory funct.)

IZYUMOV, Ye. G.

Simple electric drive for a kymograph. Lab. delo 3 no. 3:51 My-Je '57.
(MIRA 10:9)

1. Iz kafedry farmakologii (zav. - dotsent S.V. Gornin) Krasnoyarskogo
meditsinskogo instituta.
(PHYSIOLOGICAL APPARATUS)

IZYUMOV, Ye.G.

Method for studying the excretory function of the lungs. Farm. i
toks. 20 no.3:87-88 My-Je '57. (MIRA 10:10)

1. Kafedra farmakologii (zav. - dotsent S.V.Oparin) Krasnoyarskogo
gosudarstvennogo meditsinskogo instituta (nauchnyy rukovoditel'
raboty - prof. N.P.Sinitzyn)
(RESPIRATION, function tests,
technic & appar. (Rus))

IZYUMOV, Ye.G.

Method for investigating the secretory function of the lung [with
summary in English]. Biul.eksp.biol. 1 med. 45 no.1:117-119 Ja '58.
(MIRA 11:4)

1. Iz kafedry farmakologii (zav. - dotsent S.V.Oparin) Krasnoyarskogo
meditsinskogo instituta. Predstavlena deystvitel'nyy chlenom AMN
SSSR V.V.Parinym.

(LUNGS, physiology,
secretory funct., determ. (Rus))

IZYUMOV, Ye.G.

Use of BF-2 glue for fixing smoked kymographic tapes. Biul. eksp. biol.
1 med. 48 no.10:113-114 0 '59. (MIRA 13:2)

1. Iz kafedry farmakologii (zav. - dots. M.N. Poluyektov) Krasno-
yarskogo gosudarstvennogo meditsinskogo instituta. Predstavlena
deystvitel'nym chlenom AMN SSSR V.V. Parinym.
(KYMOGRAPHY equip. & supply)

L 17696-66

ACC NR: AP5024177

SOURCE CODE: UR/0290/65/000/002/0126/0129

AUTHOR: Lapik, A. S.; Izyumov, Ye. G.

ORG: Novosibirsk Institute of Organic Chemistry, Siberian Department AN SSSR
(Novosibirskiy institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR)

TITLE: Pharmacological properties of the individual glycosides of *Sirenia siliculosa*

SOURCE: AN SSSR. Sibirskoye otdeleniya. Izvestiya. Seriya biologo-meditinskikh nauk, no. 2, 1965, 126-129

TOPIC TAGS: cardiovascular system, pharmacognosy, pharmacology, drug effect,
pharmaceutic, alkaloid

ABSTRACT: The pharmacological effect of two glycosides (A and B)---derived from a crude preparation of *Sirenia siliculosa*---on the cardio-vascular system is investigated. Experiments on cats showed that A is more toxic than B and that both lack cumulative effects. Intravenous injections of 0.05 mg/kg increased the intensity of cardiac contraction by 65% with A and 58% with B and simultaneously slowed the

UDC: 615.32+615.711

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L 17696-66

ACC NR: AP5024177

rhythm of cardiac contractions by 25% (A) and 22% (B). Both glycosides increased the tone of the peripheral blood vessels of isolated rabbit ears and coronary vessels of cat hearts. A had an effect of 15% while B had an 11% effect. Studies on dogs showed that doses of 0.05-0.06 mg/kg of both glycosides increased the arterial pressure, and increased the amplitude of the pulse wave by 120-160% while decreasing its rhythm by 25-36%. In smaller doses the glycosides had no appreciable effects on either blood pressure or vessel tone. Orig. art. has: 2 tables, 2 figures.

SUB CODE: 06/

SUBM DATE: 16Mar64/

ORIG REF: 007/

OTH REF: 000

Card 2/2 *Jo*

IZYUMOV, Yuriy Patrovich; SOKOLOVA, Ye., /red.; PAVLOVA, S., tekhn.red.

[The initiative of IUrii Topilin's brigade] Pochin brigady
IUriia Topilina. Moskva, Mosk.rabochii, 1961. 25 p. (MIRA 14:2)

(Moscow--Machine tool industry)
(Moscow--Socialist competition)

"APPROVED FOR RELEASE: 08/10/2001

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APPROVED FOR RELEASE: 08/10/2001

CIA-RDP86-00513R000619410016-3"

AUTHORS: Berdyshev, A. A. and Izyumov, Yu. A. 126-5-3-24/31

TITLE: ^{s-d} The/exchange Model for Transition Metals (K s-d-
obmennoy modeli perekhodnykh metallov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3,
pp 552-3 (USSR)

ABSTRACT: In the s-d model the atom is assumed to have several (z) d-electrons, of which the energy operator is the first equation in the paper. The spontaneous magnetization M is related to M_d , defined by Eq.(1), where b and c are constants defined in Ref.(4) (and not in the paper). If α is large, M varies exponentially with T (s-d exchange). If $\alpha \ll 1$ the exact form of the law will depend on the value assigned to b, which may be 10^{-14} — 10^{-15} erg. The Euler-Maclaurin summation is then applied to give M_d in series form; the extra linear term this introduces then gives somewhat better agreement with experiment than a simple $T^{3/2}$ law. The paper contains 5 equations, (only one numbered).

Card 1/1 There are 10 references, 7 of which are Soviet, 3 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Ural State University imeni A.M. Gor'kiy)

SUBMITTED: April 11, 1957

1. Metals--Electron transitions 2. Mathematics

56-5-15/55

The Generalization of the Model of the Spin Waves For the Case Where Each Node is Surrounded by Several Electrons.

to the s-basic state in the isolated atom, also with the states of strong degeneration. The wave function of these states be $\psi_v(q, s)$ with v running through a finite totality of values.

The interatomic distances be so great that the possibility of superposition of the electron orbits remains small. The Hamiltonian of such a system is written in the representation of the second quantization. Canonic transformations are applied to certain Fermi operators. The thus obtained operators approximately satisfy the Bose interchange relations, if the weak excitations of the system are investigated. By diagonalization an expression for the energy of the system investigated in the paper under review is obtained.

Then the present paper presupposes at each node several electrons. In a ferromagnetic, of the branches of the antiferromagnetic only one depends quadratically on the quasi-impulse. In an antiferromagnetic there exist, at z electrons per atom, $2z$ mutually independent branches of Bose excitations (in a ferromagnetic there are 2).

Finally the paper under review deals with the following auxiliary problem: The energy of a weakly excited state of a

CARD 2/3

SOV/56-35-5-13/56

24(3)

AUTHOR:

Izyumov, Yu. A.

TITLE:

On the Interaction of the External and Internal Electrons in Ferromagnetic Transition Metals (O vzaimodeystvii vneshnikh i vnutrennikh elektronov v ferromagnitnykh perekhodnykh metallakh)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 5, pp 1148-1154 (USSR)

ABSTRACT:

Already Vonsovskiy and Turov (Refs 1, 2) investigated the interaction between 4s- and 3d-electrons on the assumption that in transition metals these 4s-valence electrons together with the electrons of the not filled 3d-shell play the active part, for the strong exchange interaction between the latter leads to the complete directioning of 3d-electron spins, i.e. to ferromagnetism. The spectrum of such an electron system is of mixed character, containing Bose (Boze) and Fermi branches. For the purpose of investigating interaction between 3s- and 4d-electrons in transition metals, the author bases upon a Hamiltonian for a weakly excited state of the electron system, which was set up according to Vonsovskiy and Turov (Ref 2). It is shown that the dynamic part of interaction consists in

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SOV/126-7-4-3/26

AUTHOR: Izyumov, Yu.A.

TITLE: The Spectrum of Elementary Excitations of the Electron
System of a Monoatomic Nonconducting Crystal.
I. Z-Electrons Per Atom

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 4,
pp 495-503 (USSR)

ABSTRACT: In the many-electron theory of solids one usually starts
with models in which it is assumed that at each lattice
point there is only one electron which takes part in
the given processes inside the crystal. This is only
a very approximate approach which is designed to reduce
the mathematical difficulties. However, there exist
types of solids which cannot be described by such
simplified models, for example, semiconductors with
closed electron shells and transition metals. In order
to explain the electrical and magnetic properties of
such substances, it is necessary to consider two groups
of electrons. Recently, attempts have been made to
discuss the case of a few electrons per atom on the
many-electron scheme. Among these attempts are the
papers by the present author (Ref 2) and by Kondorskiy

Card 1/3

SOV/120-7-4-3/26

The Spectrum of Elementary Excitations of the Electron System of a Monoatomic Nonconducting Crystal. I. Z-Electrons Per Atom

representation is given by Eq (4), (5) and (6). The Bose character of the spectrum is connected with the fact that the number of electrons per atom is constant during the excitation process. The elementary excitations associated with changes and conservation of the spin projection are independent. The author wishes to thank S.V.Vonsovskiy, A.A.Berdyshev and Ye.A.Turov for discussing the results of this work. There are 5 Soviet references.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Ural State University imeni A.M.Gor'kiy)

SUBMITTED: March 4, 1958

Card 3/3

SOV/126- --7-5-5/25

A Note on the Formalism Due to Holstein and Primakoff (I)

relations (1) for the operators b_j and b_j^+ are approximately Bose relations. On the basis of the correspondence principle, it is assumed that the deviation of these operators from Bose operators may be described by a function of the number of particles

$$n = b_j^+ b_j .$$

Using Eqs (2) and (3), Eq (4) can be obtained, where $f_s(n)$ and $Z_s(n)$ are functions subject to condition (5). These functions are given by Eq (8). The converse problem, namely, the problem of finding operators b_{sj} and b_{sj}^+ which are

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2/3

SOV/126-...7-5-5/25

A Note on the Formalism Due to Holstein and Primakoff (Ref 1)
defined by Eqs (4) and (8) and belong to a space having
the same dimensions as the spin space, is also solved.
There are 3 references, of which 1 is Soviet and 2 are
English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Urals State University imeni A.M.Gor'kiy)

SUBMITTED: December 31, 1958.

Card 3/3

66886

SOV/126-8-1-1/25

The Spectrum of Elementary Excitations of the Electron System of a Monoatomic Nonconducting Crystal. II. On the Limits of Applicability of the Dirac Exchange Hamiltonian

electrons forming an open shell of an atom is z and a weak Russell-Saunders coupling exists between these electrons so that the atom as a whole can be assigned a spin number s . The orbital states of these electrons are indicated by the subscript λ . The Hamiltonian for a system of electrons in a metal on the second quantization representation can be written down in the form of Eq (2) (Ref 2). If one neglects transitions between different orbital states and assumes the conditions given by Eq (3) hold, then the Hamiltonian given by Eq (2) is simplified to the form given by Eq (4), where $I(f_1 \lambda_1 f_2 \lambda_2) = F(f_1 \lambda_1 f_2 \lambda_2 f_1 \lambda_1)$ is the exchange integral between two electron states. Since orbital transitions are forbidden, the only dynamic variables of the system are the spin coordinates and hence it is clear that the Hamiltonian given by Eq (4) may be expressed in terms of spin operators. The Hamiltonian, Eq (4), can then be written down in the form given by Eq (5), where

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66885
SOV/126-8-1-1/25

The Spectrum of Elementary Excitations of the Electron System
of a Monoatomic Nonconducting Crystal. II. On the Limits of
Applicability of the Dirac Exchange Hamiltonian

of Eq (6) one then obtains Eq (10), where W is a constant and is given by Eq (11). In Eq (11) S_{fl} are classical spin vector operators. Eq (10) is identical with the Dirac Hamiltonian given by Eq (1) except for the constant term W . This shows at once the character of the approximate nature of Eq (1). The Hamiltonian given by Eq (1) can only be used when the open electron shell of an atom is sufficiently "compact" and, owing to internal exchange interactions, behaves as one. If the electron shell is "loose", then Eq (6) must be used or the more general Hamiltonian given by Eq (2). This analysis is used to study the effect of the character of the electron shell on spin waves. For simplicity a ferromagnetic in which all the z-electrons in an atom have the same spin directions is considered. There are 5 references, 3 of which are Soviet and 2 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M.Gor'kogo
(Ural State University imeni A. M. Gor'kiy)

SUBMITTED: March 4, 1958
Card 4/4

SOV/126-8-2-25/26
Magnetic Anisotropy on the Basis of Spin-orbit Interaction
crystal can lead to anisotropy. Ye.A. Turov is thanked for
valuable advice and S.V. Vonsovskiy for
discussing the results.
There are 2 references, 1 of which is Soviet and 1 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni
A.M. Gor'kogo (Ural State University im. A.M. Gor'kiy)

SUBMITTED: November 11, 1958

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67656

SOV/126-8-6-2/24

Dipole-Dipole Interaction in Ferromagnetic Resonance

resonance. leads to a Kittel type frequency shift (Ref 2) and broadening of the line which increases with temperature. Due to the presence of thermal fluctuations, the secular interaction leads to nonuniform local demagnetizing fields which cause the line broadening. At absolute zero this broadening disappears (complete ferromagnetic order). The fourth section is concerned with the effect of non-secular terms. It is concluded that dipole-dipole interaction plays an important part in ferromagnetic resonance and leads to a broadening which at 10°K, for example, is of the order of 100 oersted. However, to explain the large line width at absolute zero, other mechanism of interaction must be considered. In the case of ferrites, the interaction of spin waves with natural irregularities in the magnetic structure of the lattice is important (Ref 9) while in metallic ferromagnetics, conduction electrons contribute to this mechanism. Acknowledgment is made to Ye.A.Turov who suggested this subject. There are 10 references, 9 of which are English and 1 German.

Card 2/3

24 (2)

AUTHOR:

Izyumov, Yu. A.

SOV/20-125-6-14/61

TITLE:

A Remark on the Formalism of Holstein and Primakoff
(Zamechaniye otnositel'no formalizma Gol'shteyna i Primakova)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6,
pp 1227-1230 (USSR)

ABSTRACT:

It is a known fact that the energy spectrum of a magnetically ordered crystal may be approximated near the ground state by the spectrum of a weakly non-perfect Bose gas. From the mathematical point of view, this process is equivalent to the transition from spin- to Bose-operators. The author endeavors to find a connection between them in a general form. For this purpose, it is best to base upon the following exchange relations for the spin-operators: $[S_j^z, S_k^+] = \delta_{jk} S_k^+$;

$[S_j^z, S_k^-] = -\delta_{jk} S_k^-$; $[S_j^+, S_k^-] = 2\delta_{jk} S_k^z$, where $S_j^{\pm} = S_j^x \pm iS_j^y$.
In quasiclassical approximation - for large spins ($s \gg 1$) and small deviations from the ground state (as quantization axis the z-axis is selected) it is easy to show that

Card 1/5

A Remark on the Formalism of Holstein and Primakoff SOV/20-125-6-14/61

b_{sj} and b_{sj}^+ as are defined by the above written down relations and act in a space of the same dimension number, i.e. $2s + 1$ as also the spin operators. Between these operators the exchange relations $b_{sj} b_{sk} - b_{sk} b_{sj} = 0$; $b_{sj} b_{sk}^+ - b_{sk}^+ b_{sj} = \delta_{ik} (1 + B_s(\hat{n}_j))$ are assumed to hold, where $B_s(\hat{n}_j)$ is an unknown function of the operator $\hat{n}_j = b_{sj}^+ b_{sj}$. Here it further holds that $\lim_{s \rightarrow \infty} B_s(\hat{n}_j) = 0$. The exchange relations just written

down are satisfied if $b_{sj}^{2s+1} = b_{sj}^{2s+1} = 0$ and $B_s(\hat{n}_j) = a_s b_{sj}^{2s} b_{sj}^{2s}$ holds. The eigenvalues of the operator $\hat{n} = b_s^+ b_s$ are the integers 0, 1, 2, ..., 2s. The matrices $\{b_s\}$ and $\{b_s^+\}$ (which give a linear representation of the operators b_s and b_s^+ respectively) satisfy all necessary relations and give a linear representation of the operators b_s and b_s^+ . The total number

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A Remark on the Formalism of Holstein and Primakoff SOV/20-125-6-14/61
ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo
(Ural State University imeni A. M. Gor'kiy)
PRESENTED: January 15, 1959, by N. N. Bogolyubov, Academician
SUBMITTED: January 8, 1959

Card 5/5

IZYUROY, Y. L. H.

SOV/4893

PHASE I BOOK EXPLANATION

Vsesoyuznoye soveshchaniye po fizike, fiziko-khimicheskim svoystvam i ferritov i fizicheskim osnovam ikh primeneniya. 3d. Minsk, 1959
 Ferrity; fizicheskiye i fiziko-khimicheskiye svoystva. Doklady
 (Ferrites; Physical and Physico-Chemical Properties. Reports)
 Minsk, Izd-vo AN BSSR, 1960. 655 p. Errata slip inserted.
 1,000 copies printed.

Sponsoring Agencies: Nauchnyy sovet po magnetizmu AN SSSR. Otdel
 fiziki tverdogo tela i poluprovodnikov AN BSSR.

Editorial Board: Resp. Ed.: M. N. Sirota, Academician of the
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 Physical and Mathematical Sciences; K. M. Sholyarenko; and
 Ye. A. Babkinov; Ed. of Publishing House: S. Kholivskiy; Tech.
 Ed.: I. Volokhanovich.

PURPOSE: This book is intended for physicists, physical chemists,
 radio electronics engineers, and technical personnel engaged in
 the production and use of ferromagnetic materials. It may also
 be used by students in advanced courses in radio electronics,
 physics, and physical chemistry.

COVERAGE: The book contains reports presented at the Third All-
 Union Conference on Ferrites held in Minsk, Belorussian SSR.
 The reports deal with galvanomagnetic transformations, electrical and
 galvanomagnetic properties of ferrites, studies of the growth
 of ferrite single crystals, problems in the chemical and physico-
 chemical analysis of ferrites, studies of ferrites having
 coherently oriented domains, problems in the study of ferrite systems
 exhibiting spontaneous rectangularity, problems in magnetic
 resonance, highly coercive ferrites, magnetic spectroscopy of
 ferrites, problems in the study of ferrite systems exhibiting
 ferromagnetic resonance, magneto-optics, physical anisotropy of
 ferrites, problems in the study of ferrite systems exhibiting
 using ferrite components in electrical circuits, anisotropy of
 electrical and magnetic properties, etc. The Committee on Mag-
 netism, AS BSSR (S. V. Voskovskiy, Chairman) organized the con-
 ference. References accompany individual articles.

Ferrites (Cont.) 307/4893

Perelman, T. M., and A. A. Astashevskiy. Investigation of
 the Ferromagnetic Resonance of a Coaxial Ferrite in an Internal
 Field of Anticurrent 501

Zyryanov, P. I., T. O. Izlyukova, and O. V. Sirotyuk. The
 Effect of Electronic Magnetic Resonance on the Optical
 Properties of Ferromagnetic and Paramagnetic Dielectrics 505

Izraelov, D. A., and O. V. Sirotyuk. Magnetic Spin
 Resonance in Conduction Spectrum in Alkali and Ferro-
 magnetic Metals 513

Kotlyukov, Yu. M., and A. M. Burnysheva. The Effect of
 Anisotropic Elastic Stresses on Ferromagnetic Resonance
 Absorption in Nickel Ferrite 519

Quachhina, Z. M., V. A. Pabritov, and V. D. Kudryavtsev.
 Temperature Characteristics of Ferrite Components in SDR
 Devices 522

Card 15/18

Card 4/18

82993

S/181/60/002/008/012/045
B006/H070

Spin Resonance on Conduction Electrons
in Ferromagnetic Metals

magnetic moment, the energy of the conduction electrons must depend on the orientation of the spin relative to the magnetization vector, and for the simplest case it may be assumed that the energy of an electron ϵ_k^σ is a function of both the quantum numbers k and σ (quasimomentum and spin). The form of the magnetic resonance absorption lines is calculated on the assumption that the effective mass of conduction electrons depends on the orientation of the spin relative to the spontaneous magnetic moment. The interaction of the electrons with one another and with the lattice is described by the operator $\hat{\mathcal{H}}_{int}$, in terms of which the energy of the system of conduction electrons in the second quantization representation is represented by the Hamiltonian

$\hat{\mathcal{H}} = \sum_{k\sigma} \epsilon_k^\sigma a_{k\sigma}^\dagger a_{k\sigma} + \hat{\mathcal{H}}_{int}$. If \hat{S}_α is the spin operator of the electron system, the operator of the magnetic moment may be put as $\hat{M}_\alpha = 2\mu_0 \hat{S}$ (μ_0 -Bohr magneton). The \hat{S}_i ($i = x, y, z$) are given by formula (13), the

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The Spectrum of Resonance Frequencies of a Ferromagnetic Metal

interaction, the exchange interaction is the most important. The present paper is concerned with the effect of the s-d-exchange interaction on the spectrum of natural frequencies of the magnetic moment in transition metals. In order to estimate the contribution due to the exchange interaction, the s-d-exchange model described by Vonsovskiy in Ref 1 is employed. Vonsovskiy and Turov (Ref 2) have shown that the Hamiltonian for a system of s + d-electrons in a constant magnetic field H directed along the z-axis can be written in the form of Eq (1), where S_f^- and S_f^+ are the spin operators for the f-th site, S_d^a is the total spin of d-electrons, S_s^a is the total spin of s-electrons ($a = x, y, z$), $a_{k\sigma}^+$ and $a_{k\sigma}$ are the Fermi creation and annihilation operators for the states of s-electrons on the Bloch scheme, $J(k_1 k_2)$ is the s-d-exchange integral and g_d and g_s are the Lande factors for the d- and s-electrons.

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coupling parameter. In accordance with the approximation described by Eq (6), the Hamiltonian given by Eq (1) can be rewritten in the form of Eq (10). The approximation thus turns out to be identical with the molecular field approximation. In order to determine the natural frequencies for the spin vector, Eqs (7) and (8) are linearized, assuming that the z-components of the spin vectors are constants, i.e.

$$S_d^z = \langle S_d^z \rangle ; S_s^z = \langle S_s^z \rangle .$$

This leads to the system of four equations given by Eq (11) in which ω_d and ω_s are the Larmor frequencies defined by Eq (12). Eq (11) leads to the two natural frequencies given by Eq (13) and in the special case when the g-factors of the s- and d-electrons are equal, Eq (13) simplifies to the simple form given by Eq (14). Thus,

Card 4/5 during resonance in a transition ferromagnetic metal two

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AUTHORS: Izyumov, Yu. A. and Yakovlev, Ye. N.

TITLE: On the Theory of the Heisenberg Model of a Ferromagnetic
with a Few Electrons Per Site

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, No 5,
pp 667-672 (USSR)

ABSTRACT: In many cases the properties of ferromagnetics can be satisfactorily described by the simple Heisenberg model in which it is assumed that each lattice site can be characterized by the resultant spin \mathbf{s} and that at absolute zero the spins are completely ordered. The Hamiltonian of such a system placed in a magnetic field H is usually written in the form given by Eq (1), where S_f is the spin operator for the site f and $J(f-f')$ is the exchange integral. At the present time only the lower eigenvalues of the operator given by Eq (1) are well known. These eigenvalues correspond to weakly excited states of the ferromagnetic which appear at low temperatures. It is very difficult to find a method for

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On the Theory of the Heisenberg Model of a Ferromagnetic with a Few Electrons Per Site

The b_f and b_f^+ operators are not Bose operators and obey the further relations given by Eq (4), where n_f is the occupation index. The retarded and advanced Green functions employed in the present generalization of the Bogolyubov-Tyablikov theory are defined by Eq (5), where $b_g(t)$ is the b_g operator on the Heisenberg representation, the square brackets indicate the commutator and the $\langle \dots \rangle$ denotes an average over a statistical ensemble with a Hamiltonian H , i.e.

$$\langle \dots \rangle = \text{Sp} \{ e^{-\beta H} \dots \} / \text{Sp} e^{-\beta H}; \beta = 1/kT$$

It is easy to show that the Green functions defined in this way obey the differential equation given by Eq (6), where \hbar is the Planck constant divided by 2π and $\delta(t - t')$ is the Dirac δ -function. If the quantity

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On the Theory of the Heisenberg Model of a Ferromagnetic with a Few Electrons Per Site

contains, in addition to spin waves, high energy Bose branches which are the analogues of optical vibrations in solids when it is assumed that the elementary cell consists of a number of atoms. The presence of such branches in the energy spectrum of a real ferromagnetic, in which there are a number of "magnetic" electrons per atom, should be manifested in magnetic resonance absorption corresponding to transitions between energy levels with $k = 0$. In such cases an additional maximum should be observed at a frequency given by Eq (27), which in general lies in the infrared region. However, near the Curie point when σ is very small (σ is the relative magnetization; Eq (15)) this frequency may lie in the radio range. This situation is equivalent to the case of ferrites with a number of sub-lattices for which an analogous additional maximum has been observed. Acknowledgments are made to

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Corresponding Member of the Academy of Sciences, USSR



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AUTHOR: Izyumov, Yu. A.

TITLE: Effect of Irregularities in the Magnetic Structure
on the Width of the Ferromagnetic Resonance Line

PERIODICAL: Fizika metallov i metallovedeniye, 1960,
Vol. 10, No. 1, pp. 140 - 142

TEXT: Clogston et al (Ref. 1) have discussed the scattering of spin waves on natural irregularities in the magnetic structure assuming that this is the mechanism responsible for the observed increase in the ferromagnetic resonance line width in some ferrites. The obtained formula for the line width is in agreement with experiment insofar as the temperature dependence is concerned, although the width itself was found to be somewhat lower than the experimental value. The present author accepts this mechanism but approaches the problem from the following point of view. Consider a ferromagnetic crystal placed in a constant magnetic field H , which is directed along the z-axis, and an alternating magnetic field of frequency ω , which is polarized in a perpendicular

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EO32/E314

Effect of Irregularities in the Magnetic Structure on the Width of the Ferromagnetic Resonance Line

of the specimen and $\hat{M}_x(t)$ is the same operator in the Heisenberg representation. The Hamiltonian is then separated into two parts, namely H_0 and H' , where H_0 is the sum of the exchange operator of the system of spins and their energy in the constant magnetic field and H' is a dipole-dipole interaction energy. A perturbation calculation is then performed and it is shown that the half-width is given by

$$\Delta_{1/2}^w = 0.01 \frac{\langle \Delta D_{jk}^2 \rangle}{hJ} \approx \mu \quad (11)$$

whereas Kubo and Tomita (Ref. 1) have found that

$\Delta_{1/2}^w \sim \sqrt{\mu}$. If it is assumed that fluctuations in the

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Effect of Irregularities in the Magnetic Structure on the Width of the Ferromagnetic Resonance Line

dipole coefficient are of the same order as the coefficients themselves, i.e.

$$\langle \Delta D_{jk}^2 \rangle^{1/2} \sim 10^4 \text{ Oe}$$

and that $J \sim 10^6 \text{ Oe}$, $sz \sim 10$ and $\mu \sim 1$, then the half-width is found to be of the order of 10 Oe. This is in agreement with the experimental line width. Clogston's formula, on the other hand, yields a figure of less than 1 Oe.

Handwritten note: The value of $\langle \Delta D_{jk}^2 \rangle^{1/2}$ is of the order of 10^4 Oe .

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VONSOVSKIY, S.V.; IZYUMOV, Yu.A.

Statistical properties of the electron system of ferromagnetic transition metals. Fiz. met. i metalloved. 10 no.3:321-334 S '60.
(MIRA 13:10)

1. Institut fiziki metallov AN SSSR.
(Transition metals) (Electrons)

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E032/E414

1144, 1395, 1482, 1162
424,2200

AUTHORS: Izyumov, Yu.A. and Polyak, Yu.Ya.

TITLE: The s - d Exchange Interaction, and Resonance in Ferromagnetic Metals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5, pp.641-649

TEXT: The properties of ferromagnetic metals and alloys of transition elements indicate that their magnetic properties are in the first instance associated with electrons in unfilled shells of atoms with uncompensated spins. The exchange interaction between these electrons and conduction electrons, i.e. the so-called s - d exchange interaction, has an important effect on their collective properties in a crystal. Vonsovskiy et al (Ref.2 and 3) have shown that when the interaction with conduction electrons is taken into account, there appear two branches of spin waves. In a further paper (Ref.3) these workers investigated the damping of spin waves during their interaction with conduction electrons. This analysis is continued in the present paper with

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The s - d Exchange Interaction, and Resonance in Ferromagnetic Metals

special emphasis on the theory of ferromagnetic resonance. In the first part of the paper the complex magnetic susceptibility of a transition ferromagnetic metal is calculated as a function of the frequency of the external magnetic field. The Hamiltonian employed is that used by Vonsovskiy and Turov (Ref.4) and is given by Eq.(1.1) of the present paper. It consists of six terms. The first term contains the energy of a conduction electron E_k corresponding to a quasi-momentum k , and the Fermi creation and annihilation operators $a_{k\sigma}$ and $a_{k\sigma}^\dagger$. The second term represents the exchange energy of d-electrons, and the third and fourth terms the Zeeman energy of d- and s-electrons in a magnetic field. The last two terms give the s - d exchange operator. These two terms include the s - d exchange interval $J(k_1 k_2)$. The Hamiltonian is used to calculate the susceptibility on the molecular field approximation and also by the methods of perturbation theory. It is shown that in the case of specimens whose dimensions are smaller than the depth of the skin layer, in

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energy of two conduction electrons with the same quasi-momentum but different spin directions differs by $2sJ(kk)$. There are 9 references: 6 Soviet and 3 Non-Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: May 26, 1960

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Exchange Interaction of Inner and Outer Electrons S/O20/60/132/04/17/064
in Transition Metals B014/B007

spectrum of the d- and s-electrons. For this purpose the authors use the statistical Green function developed by N. N. Bogolyubov and S. V. Tyablikov (Ref. 7). The development of the distribution functions of the Bose- and Fermi particles is dealt with in detail, and formulas (11) and (12) are obtained. As turned out in the course of a further investigation, the exchange interaction between the outer and inner electrons leads to an exchange coupling between the inner electrons. As may be seen from formulas (18) and (19), this interaction has the character of a ferromagnetic coupling. If a direct d-d exchange of the inner electrons is lacking, this leads to ferromagnetism. Indirect interaction by conduction electrons leads only to the renormalization of the exchange integral and does not change the energy spectrum of the spin waves. Ye. A. Turov, Pu Fu-cho, T. Shiklosh, and D. N. Zubarev are mentioned. There are 9 references, 6 of which are Soviet. VC

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences, USSR). Ural'skiy gosudarstvennyy universitet im. A. M. Gor'kogo (Ural State University imeni A. M. Gor'kiy)

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